

HISTORY OF ENVIRONMENTAL PLANNING IN COASTAL AREAS WITH CLIFFS, IN THE STATE OF RIO GRANDE DO NORTE: IDENTIFYING GAPS AND DIRECTIONS FOR SUSTAINABLE MANAGEMENT

Histórico do planejamento ambiental em áreas litorâneas com falésias, no estado do Rio Grande do Norte: identificando lacunas e rumos para uma gestão sustentável

Histórico del planeamiento ambiental en áreas costeras con acantilados, en el estado de Rio Grande do Norte: identificando brechas y caminos para una gestión sustentable



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ABSTRACT

The evolution and dispersion of humanity has given rise to several changes in the relationship between society and nature, especially with regard to land use and coverage. Currently, these transformations are present across the planet, causing changes in the balance of natural ecosystems. In Brazil, environmental planning emerged in the midst of the military coup during the 1970s and has gradually evolved over the last 50 years, often displaced from reality and occupying a secondary place in political and economic agendas. In this context, this article proposes, through a literature review, to discuss the evolution of coastal planning in Brazil, particularly from the perspective of tourism in the village of Pipa, in Tibau do Sul, in the state of Rio Grande do Norte (RN). The main objective of the research is to identify gaps that support more efficient and equitable management of natural resources in coastal areas, particularly those with living cliffs. The results point to a lack of coordination between those responsible for managing these areas of the territory, resulting in the deterioration of environmental quality in these locations. The research suggests the need for a more integrated and coordinated approach to coastal management in Brazil.

Keywords: Coastal Zone; Planning; Management; Cliffs.

Article History

Received: 04 april, 2025

Accepted: 30 july, 2025

Published: 12 august, 2025

RESUMO

A evolução e dispersão da humanidade deu origem a diversas modificações nas relações oriundas da dicotomia entre sociedade e natureza, especialmente no que diz respeito ao uso e cobertura da terra. Atualmente, tais transformações estão presentes por todo o planeta, causando alterações no equilíbrio dos ecossistemas naturais. No Brasil, o planejamento ambiental emergiu em meio ao golpe militar, durante a década de 1970 e evoluiu de forma gradual nos últimos 50 anos, frequentemente deslocado da realidade e ocupando lugar secundário nas pautas políticas e econômicas. Nesse cenário, o presente artigo propõe, por meio de uma revisão bibliográfica, discutir a evolução do planejamento costeiro no Brasil, particularmente diante da ótica turística presente na Vila de Pipa, em Tibau do Sul, no estado do Rio Grande do Norte (RN). O objetivo principal da pesquisa é identificar lacunas, que deem suporte a uma gestão mais eficiente e equitativa dos recursos naturais em áreas litorâneas, particularmente aquelas com falésias vivas. Os resultados apontam para a falta de articulação entre os atores responsáveis pelo gerenciamento dessas porções do território, repercutindo na deterioração da qualidade ambiental nessas localidades. A pesquisa sugere a necessidade de uma abordagem mais integrada e coordenada para a gestão costeira no Brasil.

Palavras-chave: Zona Costeira; Planejamento; Gestão; Falésias.

RESUMEN

La evolución y dispersión de la humanidad dio lugar a diversos cambios en las relaciones derivadas de la dicotomía entre sociedad y naturaleza, especialmente en lo que respecta al uso y cobertura del suelo. Actualmente, tales transformaciones están presentes en todo el planeta, provocando cambios en el equilibrio de los ecosistemas naturales. En Brasil, la planificación ambiental surgió en medio del golpe militar durante la década de 1970 y ha evolucionado gradualmente durante los últimos 50 años, a menudo fuera de contacto con la realidad y ocupando un lugar secundario en las agendas políticas y económicas. En este escenario, este artículo se propone, a través de una revisión bibliográfica, discutir la evolución de la planificación costera en Brasil, particularmente desde la perspectiva turística presente en Vila de Pipa, en Tibau do Sul, en el estado de Rio Grande do Norte (RN). El objetivo principal de la investigación es identificar brechas que favorezcan una gestión más eficiente y equitativa de los recursos naturales en zonas costeras, particularmente aquellas con acantilados vivos. Los resultados apuntan a una falta de coordinación entre los actores responsables de la gestión de estas porciones del territorio, lo que resulta en el deterioro de la calidad ambiental en estas localidades. La investigación sugiere la necesidad de un enfoque más integrado y coordinado para la gestión costera en Brasil.

Palabras clave: Zona Costera; Planificación; Gestión; Acantilados.

1 INTRODUCTION

Changes in land use and land cover have been causing concerns among scientists for several decades since the mid-20th century, as a result of the perception of imbalances caused in the environmental systems (Lambin; Geist; Lepers, 2003). Thus, according to these authors, almost half of the land areas without ice cover have already been modified by human activity during the last 10.000 (ten thousand) years. Therefore, anthropic modifications on the Earth's surface have been occurring for thousands of years. However,



this expansion is much faster, due to the constant pursuit of natural resources and the increase in the world population (Hassan *et al.*, 2016).

In that regard, it is known that human relations occur within geographical space, which transforms natural spaces into humanized and integrated spaces, as well as controversial and unequal ones. Therefore, according to Santos (2020):

At the beginning, it was wild nature, formed by natural objects, that throughout history, has been replaced by manufactured objects, technical objects, mechanized objects, and then cybernetic objects, which makes artificial nature tend to function like a machine (Santos, 2020, p. 63).

In such a manner, it is understood that human activities are the main responsible for the changes in land use and land cover, considering that with the evolution of societies, progressively more techniques are integrated, aspiring to transform the environment into humanized and artificial nature, equipped with a myriad of technical objections, such as highways, cities and commercial structures.

Consequently, as previously addressed by Santos (2022), it is accepted that the concepts of land use and land cover as individual entities that interact with each other, in which land use corresponds to the study of information about all uses by society or the categorization of vegetation classification (Rosa; Sano, 2014). With regard to the Brazilian Institute of Geography and Statistics (IBGE), the concept of land cover describes the biotic or non-biotic elements that cover the Earth's surface (IBGE, 2013).

Hence, the study of changes in land use and land cover is responsible for generation perceptions of the socio-environmental dynamics imposed by spatial changes and for upholding the foundation for the development of public policies about land use planning. Therefore, up-to-date information on this topic is essential for resource management at any scale of work (Wulder *et al.*, 2018).

As a result, unstructured reproduction without proper planning contributes to the increase of environmental problems in any region. In coastal areas, this situation is no different, it may even occur in a more severe way, bearing in mind the problems of the coastal zone being a highly mutable and fragile environment due to its own natural characteristics (Magarotto; Costa, 2018).

Such fragility is intensified by human actions as an agent of landscape change, imposing changes on land use and land cover (Barra *et al.*, 2018). Thus, the excessive appropriation of human activities, associated with the lack of basic sanitation, are negative



aspects, which affect coastal cities, compromising environmental quality and their landscapes.

For instance, there is Vila de Pipa, located in the municipality of Tibau do Sul, on the eastern coast of Rio Grande do Norte (RN), in the Northeast region of Brazil. This place has a high natural fragility due to the geological and geomorphological context, which has been intensified by the tourism expansion in the region. As a result, the appropriation of the edges and surroundings of the cliffs have also increased, which contributes to the occurrence of disasters due to the lack of territorial planning in land use and land cover changes.

From this perspective, the presence of cliffs imposes the need for specific studies given the vulnerability of these structures. In this article, cliffs are understood according to the perspective of Antonio Christofolletti (1980), for this author, these formations are landform structures with very steep slopes, lacking vegetation cover, and located between land and ocean. Accordingly, the main objective of this article is to revisit the history of coastal environmental planning in Brazil, especially those that have an influence on the location of interest. The specific objectives are: a) Identify gaps in coastal environmental planning at the national and local levels; b) Propose suggestions based on existing methodologies, aiming at the evolution of coastal environmental planning in the country, especially in areas with living cliffs.

Thus, in order to address the proposed objectives, the article is divided into an introduction, a main section, and conclusions. The introduction discusses the general context of the topic, preparing the reader to delve into the development, where the topics covered will be examined in detail. Thus, the arguments used in writing this paper will be supported by different bibliographical references, seeking a better understanding of the processes that permeate coastal management in the country and in the state of Rio Grande do Norte. In addition, the results identified will be presented throughout this chapter. Finally, in the conclusions, new research possibilities will be proposed as a way to monitor the future of Brazilian coastal planning, especially in areas with living cliffs, as in the case of the village of Pipa.



2 METHODOLOGY

This section aims to present the main methodological foundations that underpin this work. Thus, the research is qualitative in nature, which, according to Gerhardt and Silveira (2009), indicates research that is not concerned with the use of statistical techniques. Therefore, such studies are descriptive, and data analysis is an inductive process, which is required in this type of investigation (Prodanov; Freitas, 2013).

With regard to the nature of the sources used, the article was structured through a bibliographic and documentary review based on legislation, official documents, and scientific publications. A search string was developed to search for scientific papers, which was used in the following academic databases: CAPES Journals and Web of Science. The string included the following keywords, combined with Boolean operators: “environmental planning” AND “coastal zone” OR “Rio Grande do Norte” OR “Brazil,” considering filtering by titles, keywords, and abstracts, aiming to ensure the relevance and adherence of the results.

Nevertheless, legal documents were searched through official sources, such as the Federal Government's legislation portal, as well as institutional platforms, such as the website of the Ministry of the Environment and Climate Change (MMA) and that of the Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA).

Finally, the methodological approach adopted made it possible to identify advances, gaps, and challenges still present in the implementation of coastal planning in the state of Rio Grande do Norte, especially in areas with cliffs, contributing to a critical understanding of the current environmental planning scenario in the country.

3 DEVELOPMENT

3.1 Environmental legislation in areas with cliffs

From a legal perspective, the Brazilian Constitution of 1988, in §4 of Art. 225, defines the coastal zone as national heritage, with use based on the law, under conditions that ensure the preservation of the environment (Brazil, 1988).

Furthermore, coastal areas are protected by the National Coastal Management Plan (PNGC) law, Law No. 7,661, of May 16, 1988, which establishes the National Coastal Management Plan and provides other measures (Brazil, 1988). The PNGC encompasses several goals, the main ones being the protection of coastal ecosystems, appropriate land



use and land use planning, the premise of sustainable economic development, public participation in the management of these regions, and access to information (Brazil, 1988).

It is worth mentioning Resolution No. 303 of March 20, 2002, issued by the National Environment Council (CONAMA). It deals with the parameters, definitions, and limits of Permanent Preservation Areas. In its Article 3, §8, it provides for the delimitation of Permanent Preservation Areas (APP). In the case of cliffs, the APP can never be less than 100 (one hundred) meters, in horizontal projection in the direction of the reverse of the escarpment (Brazil, 2002).

In addition, the Brazilian Forest Code, Law No. 12,651, of May 25, 2012, provides protections for cliffs, aiming to regulate the use of these regions, and in its Article 4, it provides for APPs, with item VIII stipulating the non-occupation of areas bordering plateaus or tablelands, up to the line of relief rupture, in a strip never less than 100 (one hundred) meters in horizontal projections (Brazil, 2012).

However, it is important to note that states and municipalities can also legislate on this issue, as exemplified by the state of Rio Grande do Norte. Based on Law No. 7,871 of July 20, 2000, RN deals with the Ecological-Economic Zoning of the state's Eastern Coast and provides other measures. In its Article 9, §1, item "e," cliffs are considered Preservation Areas (APs). In turn, its Article 2, §2, defines a special monitoring strip, measuring 100 (one hundred) meters horizontally from the foot of the cliffs toward the mainland. This strip is subject to use and occupation, except in areas of native vegetation, vegetated dunes, land where geological conditions do not allow for construction, and the first thirty-three (33) meters of the aforementioned strip (Rio Grande Do Norte, 2000).

Therefore, it is understood that plateau areas should not be appropriated and/or occupied, as they are protected by various legal mechanisms, which may be federal, state, or municipal. However, this is not the case in the country's coastal regions, such as the village of Pipa, where tourism has transformed the tops of the cliffs into a commodity sought after by those who visit the region. Nevertheless, despite the existence of protective instruments, enforcement functions (when they exist) can be confused among the levels of power, leading to a new environmental problem, since such laws are not respected, as is evident in the region mentioned. Hence, it is necessary to integrate the legal frameworks that guide the protection of Brazil's coastal areas, as this is the only way to achieve a real understanding of the relationship between occupation and environmental planning, which should culminate in a genuine and efficient socio-environmental management system.

3.2 ENVIRONMENTAL PLANNING IN COASTAL AREAS WITH CLIFFS

In Brazil, as already mentioned, the Coastal Zone was established by the Federal Constitution of 1988 as national heritage, expressing concern for this portion of the territory and guiding its use based on the Constitutional Text (Brazil, 1988).

Globally, in addition to historically contributing to trade by establishing port and industrial regions around the world, coastal areas have their own unique configurations and uses due to their geographical location. Among the practices associated with such locations, leisure stands out, often correlated with tourism. In Brazil, it was after the war that this spatial portion began to be seen as a possible recreational area (Moraes, 2007).

Also in this regard, according to the 2022 Census conducted by IBGE, Brazilian coastal municipalities were home to a population of 48,270,089 million people along this stretch of territory, totaling a population larger than the current number of inhabitants of 192 countries, according to data provided by the World Bank (2023).

Despite the significant number of residents, the urbanization of these regions occurred sporadically in time and space. According to Moraes (2007), it was only in the late 1970s that the settlement of the Brazilian coastline consolidated, with second homes and industrial port complexes. It is worth noting that, in the context of this research, second homes are understood as properties that are not inhabited continuously, but for short and intermittent periods, such as vacations, holidays, or weekends (Fonseca; Lima, 2012).

With the rapid urban expansion along the Brazilian coast since the latter half of the 20th century, land use and coverage in these regions should have been widely debated and linked to urban planning, as adversities such as lack of basic sanitation, improper occupations, and traffic problems tend to also affect these newly urbanized areas.

However, the production models present in Brazil at that time had economic growth as their priority, so the foundations of environmental planning were incipient and fragmented. As a result, coastal planning did not keep pace with urban sprawl along the coast. Furthermore, Moraes (2007) points out that this expansion played a fundamental role in the creation of peripheral pockets, where the less privileged classes not absorbed by the capitalist ideal took up residence.

In global terms, it was after the end of World War II that the most advanced countries began to discuss the concepts of development and underdevelopment more extensively. Nevertheless, development was understood primarily in terms of a given country's economic situation, while other areas, such as the environment, tended to be considered secondary



issues, less significant than economic growth. Planning in these cases was based on economic parameters, without taking into account other spheres of society (Santos, 2009).

Thus, it was only in the 1960s that these concepts began to be restructured, as the perception arose that the pursuit of consumption and unbridled economic growth caused serious problems, such as environmental pollution and social inequalities. Eventually, plans based solely on economic indicators began to be questioned. Planning methods were revitalized and distanced themselves from the idea of economic growth as a determining factor in the quality of life of societies (Santos, 2009).

It was also during this decade that various social movements emerged, criticizing not only the capitalist production model, but particularly the way societies lived. It is at this core that the ecological movement emerges, which is endowed with the possibility of applying and incorporating its demands in basically all social sectors (Gonçalves, 1989). In the Brazilian context, a more tangible environmental concern emerged in the mid-1970s, mainly due to demands from external financiers.

Notwithstanding, it is important to mention that it was in the 1930s that the core of the country's current environmental policy was born, with the creation of the Forest Code, Water Code, and Wildlife Protection Law. However, during the 1960s and 1970s, the governments that emerged from the military coup did not place much importance on environmental issues, as the priority was the industrialization of the territory. Still, as previously as pointed out, the developed world demanded that poorer countries take a stand. Brazil's response to such pressures came only in 1981, with the National Environmental Policy (PNMA), symbolizing the country's adherence to the new paradigms of global development.

According to Gonçalves (1989), due to external pressure, the Brazilian government devised the creation of institutions responsible for environmental issues even before the ecological movement had established itself at the national level. These organizational structures followed the global order, aiming to attract investment rather than recognizing the inherent importance of the environment.

On the other hand, it is important to mention that the PNMA is the first legal apparatus responsible for introducing the ideal of environmental planning as a way of organizing the country's territory. In the words of Rozely Santos:

Currently, environmental planning also incorporates the perspective of sustainable development, focusing on maintaining natural resource stocks,

quality of life, and appropriate land use, in addition to the conservation and preservation of natural systems (Santos, 2009, p. 23).

Therefore, in the coastal zone and due to its different uses, environmental planning is the most important tool for the protection, preservation, and management of land use and coverage in such regions. Table 01 below shows the history of the evolution of planning for these zones in Brazil.

Table 01 - History of Coastal Zone Environmental Planning in Brazil

	PRINCIPAIS ACONTECIMENTOS	ADVANCES AND SETBACKS
1970s decade	<ul style="list-style-type: none"> - Concern of the Brazilian Government regarding the use of maritime resources and coastal areas; - The emergence of an environmental perspective in the country's state planning, as a result of global events and demands from financiers; - In 1973, the Special Secretariat for the Environment of the Presidency of the Republic was created; - In 1974, the Interministerial Commission for Marine Resources (CIRM) was created. - Agencies work in an uncoordinated manner, generating inefficient guidelines and public policies. 	<ul style="list-style-type: none"> - First institutional initiatives aimed at managing marine and coastal resources, in addition to incorporating environmental perspectives into public policy, albeit in an incipient manner. During this decade, Brazil began to integrate environmental issues into state planning, influenced by international pressure. - However, the lack of coordination between the agencies created resulted in fragmented and scattered guidelines, compromising the development of coastal planning in the country.
1980s decade	<ul style="list-style-type: none"> - In 1980, the National Marine Resources Policy was created (minimizing environmental focus); - In 1981, the National Environmental Policy (PNMA) was created (it does not prioritize coastal environments); - In 1982, CIRM created the Coastal Management Subcommittee; - In 1983, the International Seminar on Coastal Management was held, laying the foundations for a National Coastal Management Plan (PNGC); - In 1984, the Second Brazilian Symposium on Marine Resources was held, where the ideas of the PNGC were further developed; - In 1985, the Second Brazilian Coastal Management Meeting was held, responsible for specifying the institutional model for implementing the PNGC; - In 1987, the National Coastal Resources Program (GERCO) was established by CIRM; - In 1988, the National Coastal Resources Plan (PNGC - Law No. 7,661, of May 16, 1988) was established; - Also in 1988, the Brazilian Federal Constitution defined the Coastal Zone as one of the areas that are National Heritage Sites. 	<ul style="list-style-type: none"> - During this decade, a regulatory framework for coastal management was gradually established, culminating in the creation of the PNGC (Law No. 7,661/1988), which represented important milestones for coastal conservation and management, such as defining the scope of the coastal zone, the creation of a coordination structure, and the assumption of oversight and regulation of practices in these locations. - In addition, the Federal Constitution of 1988 elevated the legal and symbolic importance of the coastal zone. - Law No. 6,938 (PNMA) promoted the creation of the National Environment Council (CONAMA) and the National Environment System (SISNAMA), and also made prior environmental licensing mandatory for activities that use natural resources. - However, these early regulations, such as the National Marine Resources Policy, downplayed environmental issues and prioritized the economic use of the sea and coastal regions.



<p>1990s decade</p>	<ul style="list-style-type: none"> - The PNGC was approved in 1990 and its federal supervision and coordination were transferred to the current Ministry of the Environment and IBAMA; - During the 1990s, the PNGC was responsible for promoting the integration of states and municipalities in coastal management. In addition, land use and occupation zones were created, aiming to reconcile economic development and environmental conservation. - In 1992, Brazil hosted the United Nations Conference on Environment and Development (Rio-92), where a commitment to the environmental agenda was established; - Decree No. 1,265, dated October 11, 1994, approved the National Maritime Policy (PMN), which was established by Decree No. 12,481/2025, which defined the National Maritime Policy (PMN). 	<ul style="list-style-type: none"> - In the 1990s, the PNGC was implemented, encouraging federal integration and the development of proposals for coastal zoning and reconciliation between conservation and development. - Furthermore, the Rio-92 Conference reinforced Brazil's international commitments to the environmental agenda. - Perpetuation of the mismatch between the formulation and application of standards, fragility of local initiatives in relation to coordination with the PNGC. - Despite legislative advances, implementation of the PNGC has still been limited by a lack of effective coordination between different levels of government.
<p>2000s decade</p>	<ul style="list-style-type: none"> - In 2000, Law No. 9,966 of April 28, 2000, was enacted, which provides for the prevention, control, and inspection of pollution caused by the discharge of oil and other harmful or hazardous substances into waters under national jurisdiction and makes other provisions; - In 2001, the City Statute was created through Law No. 10,257, dated July 10, 2001. In its Article 1, sole paragraph, it states that the Law establishes rules of public order and social interest, which should regulate the use of urban property for the collective good, the safety and well-being of citizens, as well as environmental balance. It also provides for popular participation in the development, implementation, and monitoring of policies aimed at the sustainable development of urban areas. - In 2004, Decree No. 5,300 of December 7, 2004, regulated Law No. 7,661 of May 16, 1988, which established the National Coastal Management Plan (PNGC), providing rules for the use and occupation of the coastal zone and establishing criteria for coastal management, among other provisions; - This Decree supported the Orla Project, which aimed to plan the coastline through the Integrated Management Plan (PGI), involving the three levels of government: municipal, state, and federal. - In 2005, the PNGC was revised, providing for greater integration and participation of social actors; - Also in 2005, Decree No. 5,377 of February 23, 2005, approved the National Policy for Marine Resources (PNRM). 	<ul style="list-style-type: none"> - During this period, the City Statute reinforced the use of urban property in accordance with the collective good and environmental balance, favoring integrated policies in urban coastal areas. - Of particular note is the strengthening of the PNGC, establishing clear criteria for coastal management and consolidating the Orla Project as a technical and participatory instrument. In addition, there has been increased social participation and better coordination between federal entities. - Law No. 9,966/2000 established standards for marine pollution control. - However, difficulties remained in fully implementing the PNGC guidelines in all spheres and coastal territories, highlighting the persistence of regional asymmetries. Thus, fragmented implementation and a lack of resources hindered the full application of established policies.

<p>2010s decade</p>	<ul style="list-style-type: none"> - Complementary Law No. 140, of December 8, 2011, which establishes rules, pursuant to items III, VI, and VII of the caput and sole paragraph of art. 23 of the Federal Constitution, for cooperation between the Union, the states, the Federal District, and the municipalities in administrative actions arising from the exercise of joint jurisdiction relating to the protection of notable natural landscapes, the protection of the environment, the fight against pollution in any of its forms, and the preservation of forests, fauna, and flora; and amends Law No. 6,938, of August 31, 1981. - In 2018, MMA Ordinance No. 76, dated March 27, 2018, was published, establishing the National Program for Coastal Conservation. Its focus is on technical and scientific knowledge of this area, its variations according to extreme events and climate change, multiple uses, and protection of marine and coastal ecosystems. - Decree No. 9,858, dated June 25, 2019, which provides for the Interministerial Commission for Marine Resources. Its purposes are: to coordinate actions related to the National Policy for Marine Resources, to exercise the powers related to the National Coastal Management Plan, provided for in Law No. 7,661, of May 16, 1988 (Included by Decree No. 11,618, of 2023), among others. 	<ul style="list-style-type: none"> - Enhancement of the principle of federal cooperation, which is essential to integrated coastal management. - In this regard, Complementary Law No. 140/2011 improved cooperation between different levels of government for environmental protection. - In addition, the National Program for Coastal Conservation (2018) and Decree No. 9,858/2019 strengthened conservation efforts in coastal areas and marine resources. - Despite the new legal frameworks, there have been budget cuts and reductions in institutional support for national environmental policy, hindering coastal planning at all levels.
<p>2020s decade</p>	<ul style="list-style-type: none"> - MMA Ordinance No. 34, dated February 2, 2021, which approves the updated list of municipalities covered by the Brazilian coastal zone land strip. - Decree No. 11,704, dated September 14, 2023, established the National Commission for Sustainable Development Goals. Article 1 establishes the National Commission for Sustainable Development Goals. Item I aims to contribute to the internalization of the 2030 Agenda in the country, and item II aims to encourage the implementation of the 2030 Agenda in the country at all levels of government and within civil society. - Law No. 14,714, dated October 30, 2023, amends Law No. 7,661, dated May 16, 1988, to include the control of marine and river erosion as a guideline of the National Coastal Management Plan (PNGC). - In June 2025, Decree No. 12,481/2025 amended its predecessor, Decree No. 1,265, of October 11, 1994, by establishing the National Maritime Policy (PMN), providing for coordinated implementation by federal public administration agencies and entities, both direct and indirect, 	<ul style="list-style-type: none"> - Current period of analysis. - The list of municipalities in the coastal zone has been updated, which is an important milestone for territorial planning and eligibility for public policies. - Law No. 14,714/2023 expanded the PNGC, including measures to control marine and river erosion, while Decree No. 11,704/2023 institutionalized the National Commission for Sustainable Development Goals, aligning Brazil with the UN's 2030 Agenda. - Decree No. 12,481/2025 established the PMN, which has a broad scope and clear objective principles that promote sustainable development through integration and coordination between the different branches of government. - However, although legislation is advancing, there are still weaknesses in enforcement, a lack of indicators of the effectiveness of actions, and discontinuity in public policies, affecting the effectiveness of coastal planning in the country.

while respecting state, district, and municipal jurisdictions.

Source: adapted from Moraes (2007) and Ministry of the Environment and Climate Change (2024).

Therefore, Table 01 shows the tangible evolution of guiding instruments from the perspective of legislation related to coastal environmental planning in the country in recent decades. In reality, despite this perception, Brazil and its federated entities still face problems related to the implementation and application of these instruments, especially at the municipal and state levels (Moraes; Hoyos, 2021). Consequently, the path to be followed involves not only improving legal instruments but also improving their application, aspiring to greater integration and participation of social spheres in Brazilian coastal management. This configuration reflects the incipient state of Brazilian environmental planning as a whole, as specific issues such as economics and engineering often dominate this structure, where social and environmental conflicts tend to be left aside (Santos, 2009).

In addition to this problem, another aggravating factor that interferes with the country's environmental planning is related to the election of candidates whose agendas view the environment as a hindrance to the fallacy of the ideal of economic development. An example of this is the federal mandate between 2018 and 2022. During this period, the Brazilian environmental scenario underwent several setbacks, from neglect to the dismantling of environmental agencies, which were already in disrepair, as discussed by Neves (2023).

It is in this scenario that even more flawed environmental plans were conceived, which seems utopian, since in Brazil, this type of planning has a history of being disconnected from reality. However, it is always necessary to examine the past and understand the interests that thrive in a state where its core has always been based on commodity exports. Therefore, it would be naive to consider easy progress in the field of environmental planning, making it necessary to develop new ways of thinking and ensure that legal environmental assumptions are not so easily circumvented, misrepresented, or extinguished, given the fragility of existing mechanisms and the lack of integration between them within the geographical space.

From this perspective, considering Brazil's territorial extension, the importance of trying to overcome the aforementioned challenges is clear, and this problem can only be overcome with the development of strategic, integrated, and participatory regional plans aimed at sustainable development and the preservation of ecosystems. As this is a



neoliberal context, the economic vector will always be present in these studies, but it should not be the focus. Only then will there be real progress on this issue. That said, two instruments will be mentioned which, if strictly followed, can contribute positively to the advancement of coastal environmental planning in the country.

First, the Integrated Coastal Management Project, or simply the Orla Project, mentioned in Table 01. This program has an integrative methodological apparatus, with explanatory publications on its processes since 2002. On the other hand, considering Moraes and Hoyos (2021) again, despite the project's extensive theoretical background, there are some issues that hinder its applicability, such as the lack of understanding in defining who is responsible for responding to environmental damage (municipalities, states, or the federal government), the lack of decentralization in the debates, and low adherence by society. These points constitute obstacles, not only to the full implementation of the Orla Project, but also in the general context of coastal management in the country.

Moreover, all manuals developed by the Orla Project are available for download on the Ministry of Economy (ME) website at the following web address¹.

It is worth mentioning that the most recent document dates from 2022 and covers the entire conceptual basis of the project, providing examples of how municipalities should join, how to mobilize the population, and how to relate to institutional arrangements at the three levels of government.

Furthermore, the manual covers in detail all stages of project implementation, starting with diagnosis and the development of participatory planning, which cannot be separated from the Orla Project. Therefore, coordination with society must take place through workshops, which need to be based on public consultations focused on the discussions held, where those involved need to express their opinions democratically.

After these stages, the core of the integrated coastal management plan is reached, again through public consultations and discussions between the other planning spheres. If approved, the final document of the plan is made available and the next phase begins, which is the creation of an implementation agenda for the goals conceived in the previous stages.

Finally, there are the monitoring and review phases, since planning is not immutable and needs to be reviewed over the years in order to sustain its actual implementation. Therefore, even with the debatable efficiency of its applicability, the Orla Project is based on

¹ Accessed at: <https://www.gov.br/economia/pt-br/assuntos/patrimonio-da-uniao/arquivos-antiores-privados/projeto-oria/projeto-oria>.

the essence of participatory environmental planning, since its methodology is based on the integration of the various actors that make up society, aspiring to build collective planning.

Thus, a beneficial and fully possible association in this context would be achieved through the assimilation of the Sustainable Development Goals (SDGs) created by the United Nations (UN) and their targets. These goals are yet another way to encourage integration between spheres of power, societies, and environmental planning, as their themes have an impact on all sectors of society. In addition, all seventeen goals are related to the coastal zone, but some have a direct connection, such as goal eleven, sustainable cities and communities, which reinforces the need for the planning of anthropic structures in urbanized coastal areas, with the construction of resilient infrastructure, which are essential requirements in view of the challenges posed by land use in these locations. Consequently, goal thirteen, which deals with actions against global climate change, directly addresses the impacts already observed in coastal areas, such as sea level rise. Therefore, the implementation of actions aligned with this goal becomes important for the mitigation and adaptation of coastal communities, aiming at safety and sustainability in such environments.

In turn, goal fourteen deals with life below water, complementing the integrated approach in coastal environments by focusing on the conservation and sustainable use of oceans, seas, and marine resources. In this sense, the health of coastal and marine ecosystems is linked to the resilience of social infrastructure and the adaptive capacity of communities residing in these areas. Next, goal fifteen, which deals with life on land, is equally central to the sustainable management of coastal areas. Although focused on the terrestrial environment, the health of land ecosystems has a direct impact on aquatic and coastal ecosystems. This interdependence means that coastal zone planning cannot be carried out in isolation, as the degradation of terrestrial habitats near the coast, such as mangroves and sandbanks, increases the vulnerability of these regions to extreme events such as storm surges and flooding.

In this context, it is clear that the complexity and interconnectedness of the challenges faced by coastal areas require a truly integrated management approach. Therefore, success in building resilient and sustainable coastal communities depends directly on the ability to implement public policies and practices that consider the symbiotic relationship between society and nature. Consequently, as a way to enable this integration, established methodologies such as the Orla Project are proving to be interesting tools in promoting participatory and intersectoral planning. Thus, their association with the SDGs would allow for a cross-cutting approach, in which coastal environmental planning can be

guided by global goals while responding to local specificities, as in the case of areas with cliffs.

In summary, the results obtained from this research indicate that such coordination represents a concrete opportunity for advancing coastal management in Brazil, especially when considering the challenges posed by institutional fragmentation, urban pressure, and climate change. Therefore, strengthening these methodologies, combined with a critical reading of international guidelines, has the potential to drive more effective, fair, and resilient public policies for coastal territories.

Hence, through the design of new studies, existing methodological bases can be improved or even introduce new insights into coastal planning in Brazil, contributing to the evolution, integration, and revitalization of the concept in the country, because in order to plan, it is first necessary to understand what planning is.

At first, it was debated that the act of planning is not an action that can be based solely on a conceptual foundation, as such an action leads to the exclusion of actors, creating a plan that is disconnected from the reality of the majority of the population. In short, in the words of Professor Aziz Ab'Saber:

Planning means drawing up improvement plans. It means finding guidelines to correct poorly organized and unproductive spaces. It means finding ways and creating conditions to intervene in the less favorable sectors of a structure or situation. It means creating sufficient economic resources to improve the living conditions of human communities in a region or country. It means taking advantage of and adapting appropriate examples and standards, wherever they come from. It means finding formulas for harmonious regional development. It means modernizing and extending development over vast areas. Finally, it means removing factors of cultural and economic inertia and achieving globalized progress in a short period of time and at the expense of the best possible common sense (Ab'Saber, 1969, p. 259).

Based on this notion, the act of planning originates from the ideal of correcting problems developed within geographical space, that is, they are conceived by humans in light of their different social organizations. Thus, the act of planning must be based on heterogeneous knowledge, which needs to provide a decisive and personalized approach to each situation and place.

For that reason, planning requires prior information about the region of interest. According to Ab'Saber (1969), no planning can take place without prior research and studies, which must be associated with geographical, sociological, economic, and historical

systematization. Hence, the author understands that diverse planning tends to result in more assertive reports and projects, with diversified conclusions that can be adapted to different established configurations.

Thus, environmental planning in areas with living cliffs, those that still have direct contact with the sea, must be carried out in a specific and individual manner, always highlighting the characteristics of the location under study, given the fragility of these structures. In the case of tourist regions, such as the village of Pipa, it is necessary to understand that such structures play an exotic role, fascinating tourists because of the scenic beauty created by such natural composition.

On the other hand, moving away from their attractive function, the collapse of these structures creates a problem that is present along the entire coastline of the planet, because in addition to natural erosion, such formations suffer from the advent of climate change. Furthermore, the lack of planning and anthropic expansion at the tops of these areas also influence the increase in erosion rates (Portman, 2018).

In short, it is important that researchers, society, and authorities address the specificities of coastal environmental management as an interconnected core, encompassing the coexistence of various actors and planning to develop integrated actions and projects that comply with the precept of sustainable development.

4 FINAL CONSIDERATIONS

Therefore, it should be noted that coastal planning in areas with cliffs should not be considered as something different from coastal planning as a whole, but rather as a specific section that requires differentiated studies, given the fragility of such structures. Thus, only participatory and interdisciplinary planning can help mitigate such problems. To this end, existing methodologies can be employed, such as the Orla Project and the SDGs, discussed in this article, which could enable the development of coordinated planning, adapted to the different realities found throughout Brazil.

Nevertheless, this was only one concept; others may be suggested through different existing methodological bases that do not communicate with each other. Hence, future studies may focus on new proposals integrating other ideals of coastal environmental planning, aspiring to the evolution of the theme and its discussions in the most varied social spheres.

In this scenario, it is understood that the formulation of laws, decrees, and projects focused on coastal environmental planning are essential for the conservation of natural resources in these regions. Therefore, in a country with such a large territory, it is essential to integrate environmental planning in a comprehensive manner, defining responsibilities and goals for each governmental and social actor. Legal frameworks are already in place, but they need to be effectively enforced. Until this happens, Brazilian coastal environmental planning will continue to be out of touch with reality, i.e., unsuccessful.

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